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Analysis of Waste in the Package Management Process Using Value Stream Mapping Method at PT Pos Indonesia Branch Office Unit (Central Post Processing unit 20900) Tanjung Morawa

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Abstract: There are several challenges in the package processing activities at Central Post Processing unit 20900 Tanjung Morawa, which have been identified by the Post Office employees who often work overtime and delayed items that remain at the Post Office. Therefore, this research is conducted with the aim of identifying the types of waste in the package management process within Central Post Processing unit 20900 Tanjung Morawa and determining steps to optimize it. Waste analysis is carried out using the Value Stream Mapping method, which is one of the techniques in the Lean concept. From the data analysis conducted at Central Post Processing unit 20900, it is evident that the goods management activities take approximately 7 hours in a day, while the company's operational time is 6 hours. Through this research, several types of waste related to the package management process in Central Post Processing unit 20900 can be identified. These wastes are found in repetitive manifest checking, barcode scanning and input into the system, and sorting processes. To address these wastes, streamlining is implemented, which involves eliminating some non-value-added activities in a process, automating the PT Pos Indonesia system, and eliminating repetitive tasks. As a result, the goods management process, which used to take approximately 7 hours a day, has been reduced to 5 hours a day.

Keywords: *Expedition, Lean, Package Processing, Value Stream Mapping, Waste Analysis*

1. Introduction

The expedition service is a company engaged in shipping packages that can be done both by land, sea and air to all regions in Indonesia or abroad. With the advancement of the times and technology at this time that allows everyone to transact indirectly, so the role of the expedition service is very important. Some examples of expedition companies in Indonesia today are JNE, J&T, Pos Indonesia, TIKI, Sicepat, Ninja Xpress, Indah Logistik and many more that have not been mentioned. Every package shipment, before being sent to the destination address of the package, will be sorted at the PT. Pos Indonesia package processing center in each region

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(Central Post Processing unit). PT. Pos Indonesia is one of the expedition companies in Indonesia that has been established since 1746. With the advancement of the times and technology, as well as the advancement of the internet, it has a significant impact on indirect transactions. The vastness of Indonesia makes the expedition service play a very important role in the life of every society and the progress of the times at this time. And in the advancement and sophistication of technology that exists at the moment, it make people increasingly want everything to be instant and fast. The same goes for shipping, every society increasingly wants a service that provides shipping within a short time and with a cheap tariff. However, it is not as easy as expected, because in shipping packages there are certain processes that must be passed through such as the process of collecting incoming packages, entering data, sorting packages, grouping, and distributing packages to all regions. In this case, the Post Processing Center is where the package management process takes place. The many processes and sub-processes in package management also take a lot of time. Seen from the dissatisfaction of service users causes the public to choose other expedition services. Not only that, but it can be observed from the employees at Central Post Processing 20900 Tanjung Morawa who often leave work late or work overtime because their tasks are unfinished, and also because packages cannot be processed on time due to the company's operational time limitations. It can be concluded that the package processing performance system and the time used in Central Post Processing unit 20900 Tanjung Morawa are still relatively ineffective. It is necessary to identify what problems and contributing factors are causing the inefficiency in the package management performance system at the Central Post Processing unit in order to optimize it.

The results of this study refer to previous research entitled **Implementation Of Lean Warehousing To Improve Warehousing Activity Performance in Book Printing Company Warehouse** which was compiled by Buni Pradina Bestari, and Erika Fatma from APP Polytechnic Jakarta, Indonesia (2020). This research uses value stream mapping as the analysis method and only differs in the object of research, in the previous research, the object of research is the operating system in the warehousing business while this research is the operating system for management in the expedition business. The results of previous research are the discovery of waste in the business process from the results of waste analysis using value stream mapping. The biggest waste is in waste movement (movement) and the proposed improvement is to minimize the movement of goods and more clear coordination between parts in the company. The proposed improvement was made based on the results of the analysis using fishbone, while in this study the streamlining method was used in determining the improvement proposal. The purpose of conducting this research is to identify waste that arises in the package Management Process at the 20900 Tanjung Morawa Post Processing Center along with the factors that cause the waste and also to find out what plans can be applied to improve the Package Management Process at the 20900 Tanjung Morawa Processing Center.

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2. Literature review

2.1. Operation Management

Operations management is a series of activities that generate value in the form of goods and services by transforming inputs into outputs. Activities that produce goods and services take place in all organizations, both manufacturing and service companies. According to Fogarty (in Prasetya, 2009), Operations Management is a process that continuously and effectively uses management functions to integrate various resources efficiently in order to achieve goals. Operations and supply chain management are defined as the design, operation, and improvement of systems that create and deliver the primary products and services of a company or business. As part of the company's core functions, operations and supply chain management involve specialists in product design, purchasing, manufacturing, service operations, logistics and distribution (Jacob, 2018).

2.2. Process Analysis

Process and activity analysis is the process of identifying significant organizational activities and processes in order to establish a clear and concise basis for explaining business processes and for establishing costs and performance (Wijaya, 2021). Process analysis is done with the aim of studying or understanding business processes in a business or organization. The purpose of conducting process analysis is to analyze and document the company's workflow and identify barriers or constraints in the process.

2.3. Waste

Waste or also known as waste is any work activity that does not add value in the process of transforming input into output along the value stream. In this study, the wastes are categorized into several types, namely:

D = Delay (Delay)

I = Inspection (Inspection)

T = Transport (Goods delivery)

O = Operation (Operation process)

S = Storage (Storage of goods).

2.4. Lean

According to William (in Wahyuni et al., 2015), the Lean Concept is a set of tools and methods designed to eliminate waste, reduce waiting time, improve performance, and reduce costs. According to Gasperz (in Wahyuni et al., 2015), Lean is a continuous effort to eliminate waste (waste) and increase added value (value added) of products (goods and/or services) in order to provide value to customers (customer value). The purpose of Lean is to eliminate all waste processes and maximize process efficiency (Bestari & Fatma, 2020). Lean focuses on continuously improving customer value through the identification and elimination of non-

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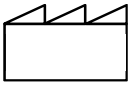
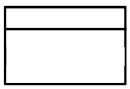
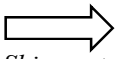
value-added activities that are waste (waste). In this study, the method in the Lean concept used is the Value Stream Mapping and Streamlining method for improvement analysis.

2.5. Value Stream Mapping

Value stream mapping is a map of the flow of value stream processes that describes the production process using manufacturing lead time in the production section until the product is in the hands of consumers who go through the process of ordering, procuring raw materials to distribution (Maulidya & Hamka, 2013). Value stream mapping is a method that uses a picture of the process and identifies and measures waste in a process (Wahyuni et al., 2015).

Value Stream Mapping (VSM) uses standard symbols that represent processes, materials, information, and others. In the study of the operation process in the 20900 Tanjung Morawa Post Processing Center, not all process symbols are used because the research only focuses on the operation process in the Post Processing Center. The Value Stream Mapping (VSM) symbols used are in the following table.

Table 1
Process Symbol

Process	
 *Sources*	This symbol represents an outside source and is used as the starting and ending point of the material flow.
 *Dedicated Process*	This symbol is a symbol of a process, operation, machine, or department where material flow occurs.
 *Push Arrow*	This symbol represents the movement of goods/products from the previous process to the next process.
 *Shipment*	This symbol represents the movement of goods/products from outside to the company or from the movement of goods/products from the company out.
Information	
	This symbol represents other additional information.

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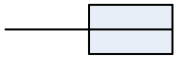
	Process
Other Information	
 *Manual Info*	This straight arrow symbol represents the flow of information from memo, report, or conversation.
 *Electronic Info*	This zigzag arrow symbol represents the flow of information that is done electronically.
	General
 *Timeline*	This symbol represents a timeline showing value added time and non-value added time. The timeline is used to calculate lead time and total cycle time.
 *Timeline Total*	This symbol represents the total timeline of the entire process. It contains the amount of lead time and the amount of processing time.
 *Operator*	This symbol represents the operator required to process a product/service at a workstation.

2.6. Streamlining

According to Jarwosuwito (2017), in streamlining business processes, there are 12 improvement tools that can be applied, namely:

1. Bureaucracy elimination, namely eliminating administrative tasks, and unnecessary paperwork.
2. Duplication elimination, namely eliminating a similar activity that occurs in a part of a different process.
3. Value-added assessment, namely evaluating each activity in the business process to determine its contribution to customer needs.
4. Simplification, namely reducing the complexity of a process.
5. Process cycle-time reduction, namely determining ways to reduce cycle time and

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minimize storage costs.

6. Error proofing, namely making it difficult to make mistakes.
7. Upgrading, namely making the effectiveness level higher in improving performance in the business process.
8. Simple language, namely reducing the complexity of writing and speaking, making documents easier for users to understand.
9. Standardization, namely choosing one of the ways to standardize activities.
10. Supplier partnerships, namely improving the quality of input, because process output has a high dependence on the quality of process input received.
11. Big picture improvement, namely a technique that is used if the ten simplification tools above do not produce the desired results. This is designed to help management find creative ways to radically change the process.
12. Automation and/or mechanization (automation and/or mechanization), namely the application of equipment and computers to boring and routine tasks, so that these activities are reduced to free workers to do more creative activities.

the streamlining process, it will describe the most important basis for improvement process and streamlining will create positive changes in the effectiveness and efficiency of business processes (Pratomo, 2021).

3. Research method

The method used in this research is using Value Stream Mapping Method (VSM). The purpose of this method is to implement a deeper understanding of the business process flow within the company and identify various types of waste that occur during the process. Furthermore, predictions and improvement recommendations are provided to enhance the effectiveness, efficiency, and smoothness of the process flow. The data analysis uses the Value Stream Mapping method. Value stream mapping measures the impact of value-added activities or non-value-added activities on the total lead time of a process. Activities in the Value Stream are divided into three, namely:

1. Value Added activities (VA) are activities that create added value.
2. Non-Necessary Value-added activities (NNVA) are activities that do not add value but cannot be avoided due to current technology or assets.
3. Non-Value-Added activities (NVA) are activities that do not add value and can be avoided immediately.

In the creation of value stream mapping (VSM), several stages of Value Stream Mapping processing are carried out. In detail, the VSM process stages are described as follows:

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1) Current State Mapping

   In the research using the Value Stream Mapping tools, the first step is to create a map of the current process condition or what can also be called the Current State Map in the processing of packages at the Central Post Processing 20900 Tanjung Morawa. In the current state map, the process flow is depicted starting from the arrival of goods at the Postal Processing Center, namely in the DISTRANS (Transportation Distribution) section and received in the Incoming section, sorted again to the Outgoing section until the distribution of the goods through DISTRANS (Transportation Distribution). The current state map also includes the time required in the processing of the package, also called the cycle time. This is useful for knowing the activities that Value added (VA) and the activities that Non-Value-Added (NVA).

2) Waste Analysis

   After making the current state map, from the process map that has been illustrated with the processing time of each process section, it can be seen which process section has waste and what are the factors causing the waste.

3) Streamlining

   After knowing the waste and its causes, streamlining of the waste is carried out. In streamlining, it will be known what improvement plan can be done to minimize waste. Thus, streamlining serves as a way to create more efficient processes.

4) Future State Mapping

   After finding waste and streamlining the waste, the process can then be formulated after the improvement has been made by creating a Future State Map in the process of managing goods at the 20900 Tanjung Morawa Postal Processing Center.

4. Results and discussion

All packages to be processed at the Central Post Processing 20900 Tanjung Morawa are packed daily in bags within the operational working hours available at Central Post Processing 20900 Tanjung Morawa, which is 7 hours, from 12:00 PM to 7:00 PM (WIB), with a 1-hour break. Therefore, it can be concluded that the available time to process 31 sacks each day is 6 hours. In this research, the researcher used data on the number of sacks and items processed over a 24-day period from December 1st to December 24th, 2021, at Central Post Processing 20900 Tanjung Morawa.

The received items are either for the destination address of Medan-Tanjung Morawa (Local) or outside Medan-Tanjung Morawa but still within the North Sumatra region (Passe). From the data provided, which shows that the number of bags managed by the Central Post Processing 20900 Tanjung Morawa over 24 days is 729 bags, we can see that the average number of bags

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processed per day is 30 bags/day. The average number of items managed per bag can vary, ranging from 1 to 60 items per bag, and on any given day, it can reach as high as 400 to 1,200 items per day, and even up to 2,000 items during busy days. From the data above, we can see that the average number of items processed per day is 960 items/day, with an average of 32 items per bag.

All incoming items received at the Central Post Processing 20900 Tanjung Morawa have different destination addresses. These items are sorted based on their destination, whether they are intended for the local Medan area or for destinations outside Medan (Passe). Below is the data on the number of items processed based on their destination, whether they are local or Passe, for the period from December 1, 2021, to December 24, 2021.

Table 2
Total local and Passe items for the period from December 1, 2021, to December 24, 2021.

Date	Total Items	Total Local Items	Percentage	Total Passe Items	Percentage
1-Dec-21	1,192	754	63%	447	37%
2-Dec-21	829	523	63%	306	37%
3-Dec-21	601	423	70%	178	30%
4-Dec-21	729	542	74%	187	26%
5-Dec-21	817	452	55%	365	45%
6-Dec-21	1,233	917	74%	316	26%
7-Dec-21	1,028	700	68%	328	32%
8-Dec-21	1,002	639	64%	363	36%
9-Dec-21	713	552	77%	161	23%
10-Dec-21	872	407	47%	465	53%
11-Dec-21	891	456	51%	435	49%
12-Dec-21	1,002	753	75%	249	25%
13-Dec-21	1,033	830	80%	203	20%
14-Dec-21	1,287	722	56%	565	44%
15-Dec-21	1,100	559	51%	541	49%
16-Dec-21	1,029	819	80%	210	20%
17-Dec-21	1,325	764	58%	561	42%
18-Dec-21	723	565	78%	158	22%
19-Dec-21	823	432	52%	391	48%
20-Dec-21	1,203	918	76%	285	24%
21-Dec-21	1,029	700	68%	329	32%

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Date	Total Items	Total Local Items	Percentage	Total Passe Items	Percentage
22-Dec-21	899	682	76%	217	24%
23-Dec-21	783	413	53%	370	47%
24-Dec-21	892	306	34%	586	66%
Total	**23,035**	**14,828**	**64%**	**8,207**	**36%**

From the table above, it can be observed that in one day, items with a local destination represent a percentage of 64% of the total number of items managed in a day, while items with a Passe destination represent a percentage of 36% of the total number of items in a day. In this study, there are several activities that are reviewed based on the number of items, where one bag consists of 32 items. Therefore, the data on the processing time of items is adjusted based on the type of activity included in it.

Table 3
Total bag processing time and activity lead time

No	Process Name	Average processing time (Seconds/ bag)	Average processing time (Seconds/30 bags)	*Lead time* (Seconds/ Activity)	Total (Minutes/ bag)
1	**Incoming Bags Process (Distrans)**				
	1. Bags Unloading	7.96	238.75	101.96	5.68
	2. Scan bag barcode (System)	4.00	120	95.96	3.60
	3. Print bag manifest for Incoming process	4.71	141.25	22.21	2.72
	4. Forwarding the sack to the Incoming process	9.46	283.75	35.25	5.32
	Total	**26.13**	**783.75**	**255.38**	**17.32**
2	**Incoming Bag Process (incoming)**				
	1. Scan bag seal barcode	3.79	113.75	-	1.90
	2. Open the bag and check the manifest	57.92	1,737.5	52.67	29.84
	3. Scan bag seal barcode	3,04	91,2	27.71	2.59
	Total	**64.75**	**1,942.45**	**80.38**	**33.71**

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No	Process Name	Average processing time (Seconds/ bag)	Average processing time (Seconds/30 bags)	*Lead time* (Seconds/ Activity)	Total (Minutes/ bag)
3	**Receiving Package Items Process (incoming)**				
	1. Scan Item barcode	88	2,640	-	44
	2. Sort by destination area	128	3,840	79.25	65,32
	Total	**216**	**6,480**	**79.25**	**109.32**
4	**Package Item Handover Process (incoming)**				
	1. Scan Item barcode	121.33	2,426.67		
	2. Sort by local branch office	184.00	3,680.00	98.79	62.98
	Total	**305.33**	**6,106.67**	**98.79**	**103.43**
5	**Bag Closure Process (incoming)**				
	1. Scan branch-specific item barcode	149.33	2,986.67	-	49.78
	2. Insert items into bag	89.33	1,786.67	-	29.78
	3. Print item manifest for each bag	22.67	453.33	30.75	8.07
	4. Scan bag seal barcode	3.92	78.33	-	1.31
	5. Print the seal number and seal the bag	22.38	447.50	-	7.46
	6. Scan the seal number for the bag manifest	26.79	535.83	-	8.93
	7. Print the bag manifest	19.79	395.83	47.83	7.39
	8. Forward the bag and manifest to distribution (Distrans)	10.71	214.17	35.92	4.17
	Total	344.92	**6,898.33**	**114.50**	**116.88**
6	**Outbound package (distrans)**				

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No	Process Name	Average processing time (Seconds/ bag)	Average processing time (Seconds/30 bags)	*Lead time* (Seconds/ Activity)	Total (Minutes/ bag)
1.	Enter data for the departing vehicle	26.63	798.75		
2.	Scan the bag's barcodes to be loaded (System)	5.04	151.25	-	2.52
3.	Print the bag manifest	12.00	360.00	49.00	6.82
4.	Bag loading	5.71	171.25	-	2.85
	Total	**49.38**	**1481.25**	**73.83**	**25.92**
	Total Minutes				**406.57**
	Total Hours				**6.78**

It can be seen that the overall processing time of items at the Central Post Processing 20900 Tanjung Morawa exceeds the company's operational working hours. This results in employees working beyond the operational hours (overtime), and there are also some items that are left unfinished in a day, causing delays in their delivery.

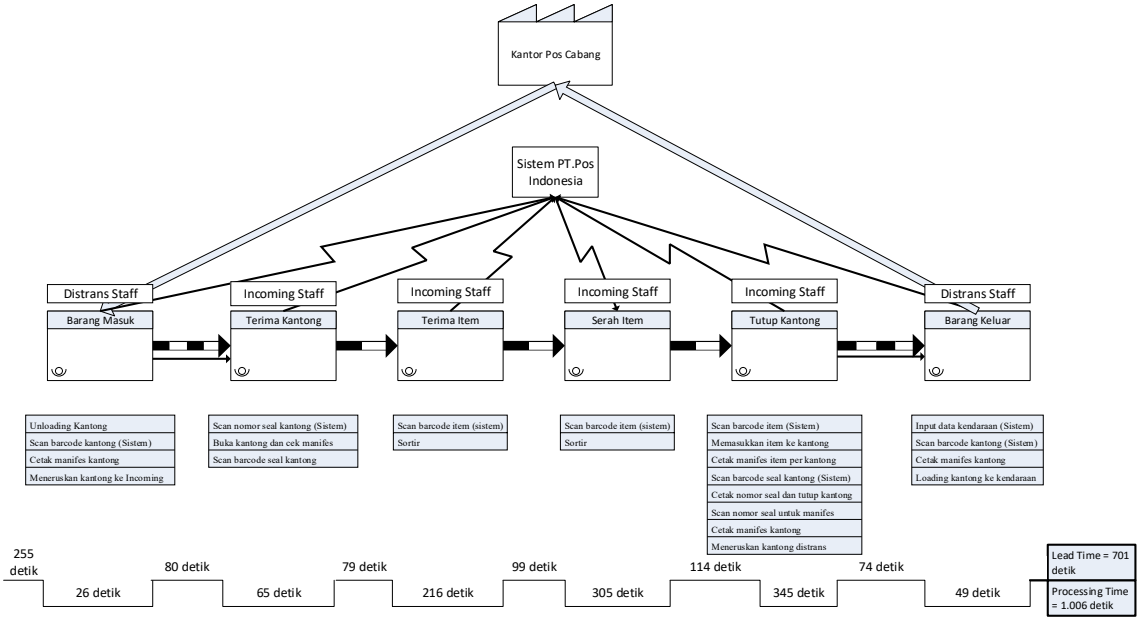

Fig. 1 Current State Map

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The current state map above illustrates the process flow that occurs in the Distrans and Incoming sections of Central Post Processing 20900. The process begins with items being received from the originating branch post offices in the Distrans section. Then, the items are handed over to the Incoming section for the bag and item receiving process. After the item receiving process, the parcels are processed for delivery to their respective destinations, which involves item handover and bag closure. The grouped parcels are then returned to the Distrans section for re-sending to the branch post offices in the respective destination areas. Throughout the entire process, there is data entry for the items into the system.

From the overall process, it can be observed that the processing time required for one bag is 1,007 seconds, and the total lead time in one day is 701 seconds. In classifying activities as waste, the research uses the percentage waste calculation as follows:

Given that the total number of activities in the entire process is 36, including lead time activities, you can calculate the waste percentage as follows:

100% / 36 activities = 2.78%.

This can be interpreted as each activity should ideally have a 2.78% share of the overall process time. If an activity takes longer than this percentage, it indicates that the activity has a long processing time (overtime) and may be considered a waste in the process.

Table 4
Waste Analysis

No	Process Name	D	I	T	O	S	Activity	Processing Time (Seconds)	%
1	**Incoming Bag Process (Distrans)**								
	1. Bag Unloading Process.				239		VA	239	0.98%
	2. Waiting for the unloading process to finish	102					NVA	102	0.42%
	3. Scan the bag's waybill barcode (System)				120		VA	120	0.49%
	4. Waiting for the buffering system	96					NVA	96	0.39%
	5. Print the manifest for Incoming				141		NVA	141	0.58%
	6. Waiting for the	22					NNVA	27	0.11%

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No	Process Name	D	I	T	O	S	Activity	Processing Time (Seconds)	%
	printer to function								
	7. Forwarding the items to Incoming				284		VA	284	1.16%
	8. Transition from Distrans to Incoming				35		NNVA	35	0.14%
2	**Receive the bag (Incoming)**								
	1. Scan the bag seal barcode (System)				114		VA	114	0.47%
	2. Open the bag and check the manifest		1,737				NNVA	1,737	7.11%
	3. Waiting for manifest inspection	53					NVA	53	0.22%
	4. Scan seal barcode				127		NVA	127	0.52%
	5. Waiting for the seals to be collected	28					NVA	28	0.11%
3	**Receive the item (Incoming)**								
	1. Scan item barcode (system)				2,640		VA	2,640	10.80%
	2. Sort by destination area (local/passe)				3,840		VA	3,840	15.71%
	3. Finding out the item grouping code		79				NNVA	79	0.32%
4	**Hand over the item *(Incoming)***								
	1. *scan item barcode* item				2,427		NNVA	2,427	9.93%

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No	Process Name	D	I	T	O	S	Activity	Processing Time (Seconds)	%
	(system)								
	2. Sort by local branch office				3,680		NNVA	3,680	15.06%
	3. Finding out the item grouping code		99				NNVA	99	0.41%
5	**Bag Closure Process *(Incoming)***								
	1. Scan item barcode per branch office (System)				2,987		VA	2,987	12.22%
	2. Insert items into bags				1,787		VA	1,787	7.31%
	3. Print item manifest for each bag				453		VA	453	1.85%
	4. Waiting for the printer to function	31					NVA	31	0.13%
	5. Scan the bag seal barcode (System)				78		VA	78	0.32%
	6. 5. Print the seal number and seal the bag				447		VA	447	1.83%
	7. Scan the seal number for the bag manifest				536		VA	536	2.19%
	8. Print the sack manifest				396		VA	396	1.62%
	9. Waiting for the printer to function	48					NVA	48	0.20%
	10. Forwarding the bag and manifest to Distrans				214		VA	214	0.88%

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No	Process Name	D	I	T	O	S	Activity	Processing Time (Seconds)	%
	11. Transfer of items from Incoming to Outgoing	36					NNVA	36	0.15%
6	**Outbound package (Distrans)**								
	1. Enter data for the departing vehicle				799		VA	799	3.27%
	2. Waiting for the vehicle	25					NNVA	25	0.10%
	3. Scan the bags' barcodes to be loaded (system)				151		VA	151	0.62%
	4. Print the bag manifest				360		VA	360	1.47%
	5. Waiting for the printer to function	49					NVA	49	0.20%
	6. Bag Loading				171		VA	171	0.70%
	Total	**490**	**1,915**		**22,026**			**24,436**	**100.00%**

From data in table 5, it is identified that there are 6 activities with values exceeding the tolerance limit, making these seven activities waste. However, it is worth noting that out of these seven waste activities, the following three activities in the "Incoming" process are categorized as Necessary but Non-Value Added (NNVA) and they will undergo streamlining:

1. The process of opening the bag and checking the manifest, becomes waste because in this process checking the manifest takes a long time because it is done by opening the bag and removing all the items in the bag and checking one by one whether the number of bags matches the bag manifest or not.
2. Process of *scanning item receipt barcodes* for input into the PT system. Post the Item Handover process in the Incoming section, this becomes waste because inputting handover items into the system is done one by one based on the destination area where the goods are sent.
3. The process of sorting items based on the delivery area (post office branch) and the destination of the goods in the Handover Items process in the Incoming section, becomes

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waste because sorting takes a long time because employees do not memorize the item grouping codes per area so they need to ask other employees first or to the section manager.

The factors causing waste in these activities have been identified as described above, and streamlining will be implemented to address these issues.

Table 5
Streamlining

Process Name	Process issues	Streamlining Tools	Improvement
Open the bag and check the manifest	Checking each item one by one to verify if the quantity matches the bag's manifest	Bureaucracy elimination, Automation and/or mechanization	Eliminating the checking activity and implementing automation in the system, so in the previous step, scanning the bag seal barcode in the system will already display the number of items inside the sack and the item's waybill number, thus eliminating the need for a re-check.
Scan the item's barcode during the handover process (system)	The activity of scanning items one by one to input them into the system based on the destination area (branch office)	Duplication elimination, Automation and/or mechanization	Eliminating this activity since the input into the system has already been done in the previous step. Then, automation is applied to the system so that from the preceding process, it can be directly and automatically input into the item handover data for each destination area.
Sort by local branch office	The employees are not familiar with the item grouping codes for each destination area	Automation and/or mechanization, Simplification	Eliminate this activity because the input into the system has already been performed in the preceding process. Then, automate the system so that the data for handing over items to each destination area is directly and automatically input from the preceding process.

The implementation of streamlining tools is carried out based on the factors causing the waste. Therefore, by identifying the root causes of the waste, we can determine which streamlining tools to use. The application of streamlining tools is also discussed with the management of Sentral Pengolahan Pos 20900 Tanjung Morawa.

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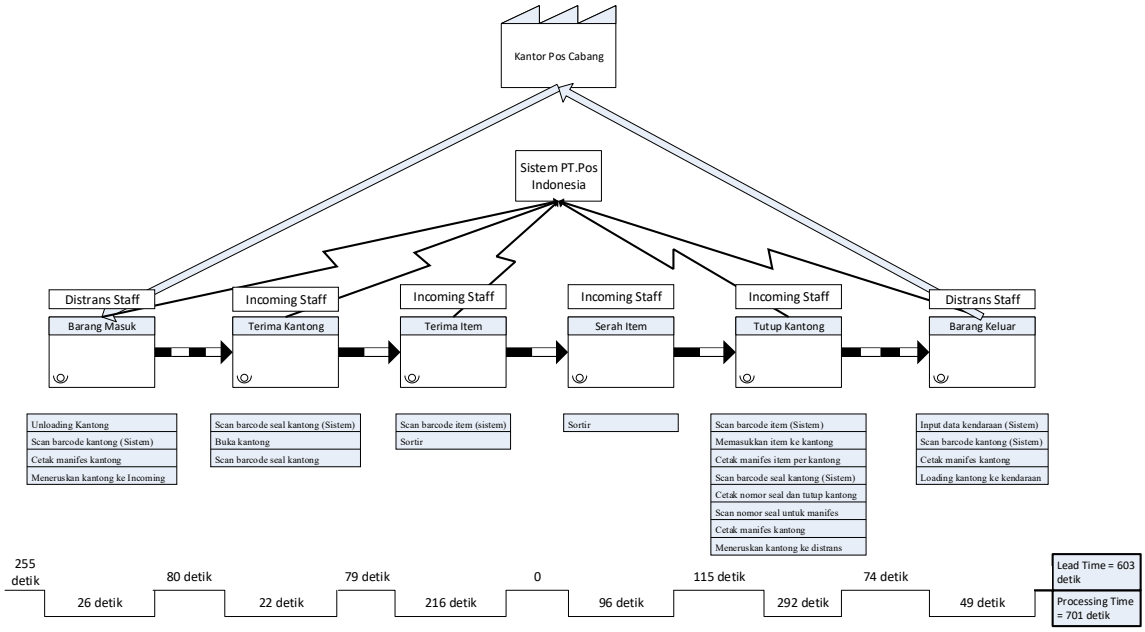

Fig. 2 Future State Map

From the future state map above, it can be observed that a change has occurred in the process of item handover in the Incoming section, where data input into the system is no longer necessary due to simplification in the barcode scanning system in the previous process. After the improvements have been made, the overall processing time for managing one bag is 672 seconds, and the overall lead time for the entire process in one working day is 650 seconds. This is because several waste activities have been eliminated, and some activities have had their processing times changed due to the simplification of the PT. Pos Indonesia system.

5. Conclusion

From the research results obtained using the value stream mapping method, here are some conclusions from the results to answer the research problem formulation

Activities that constitute waste in the goods management process at the Central Post Processing 20900 Tanjung Morawa are the activity of checking packages one by one to find out whether the quantity matches the bag manifest, the activity of scanning item barcodes for input into the system one by one based on the destination area, and the activity of sorting packages which takes a long time.

It is also known that the factors causing this waste are in the process of opening the bag and

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checking the manifest. This process is carried out by opening the bag removing all the items in the bag and checking one by one whether the number of bags matches the bag manifest or not. The process of scanning item barcodes for input into the PT System. Posts during the Item Handover process in the Incoming section are carried out one by one based on the delivery area (Branch Post Office) to which the goods are sent. Then employees who do not memorize the item grouping codes per branch office area need to check first or confirm with the section manager.

6. Implications

In order to overcome this, it is recommended to take several corrective actions (improvements) to the existing waste by eliminating manifest checking activities and implementing automation on the web system so that in the previous activity, namely scanning the bag seal barcode on the system, it displays the amount of the contents of the bag and the receipt number. item then there is no need to recheck the manifest. Also eliminating the activity of scanning item barcodes in the item handover process and implementing automation on the PT web system. Pos Indonesia so that during barcode scanning activities, inputting item data into the previously processed system is automatically input into the item delivery system per region for each item's destination. Finally, with a web system that has been automated to display the address grouping codes for shipped goods, it can make it easier for employees to sort goods with PT. Pos Indonesia's advanced web system can influence the entire goods management process system at the Central Post Processing 20900 Tanjung Morawa.

Based on the existing conclusions, suggestions are given for this research. The suggestion for the Postal Processing Center 20900 Tanjung Morawa, is that the company submits suggestions for changing the PT. Pos Indonesia web work system so that it can become more effective and efficient, both the management process and the distribution process in order to improve the quality of the company's work. For further research, it would be advisable to carry out the Postal Processing Center in other regions to compare it with the Postal Processing Center 20900 Tanjung Morawa so that it can be seen whether the existing obstacles also occur in Postal Processing Centers in other regions or only occur at the Postal Processing Center 20900 Tanjung Morawa.

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http://proceedings.itltrisakti.ac.id/index.php/altr

References

Bastuti, S., Alfatiyah, R., Shobur, M., & Candra, A. (2019). Manajemen Logistik. Teknik Industri, 1. https://doi.org/10.1088/1751-8113/44/8/085201

Bestari, B. P., & Fatma, E. (2020). Penerapan Lean Warehousing Untuk Meningkatkan Kinerja Aktivitas Gudang Pada Perusahaan Percetakan Buku Implementation Of Lean Warehousing To Improve Warehousing Activity Performance In Book Printing Company Warehouse. Prosiding Seminar Nasional Manajemen Industri Dan Rantai Pasok, 1, 160–169.

Jarwosuwito, S. (2017). Metode Business Process Improvement. Education Blog. http://blog.binadarma.ac.id/yantox_ska/2012/11/metode-business-process-improvement/#:~:text=Bureaucracy elimination (eliminasi birokrasi)%2C,bagian dari proses yang berbeda.

Manora, E. (2019). Pengertian Proses Menurut para Ahli. Scribd.Com. https://www.scribd.com/document/343862593/Pengertian-Proses-Menurut-Para-Ahli-doc

Maulidya, R., & Hamka, A. (2013). Meminimasi Manufacturing Lead Time Menggunakan Value Stream Mapping Dan Dampaknya Pada Bullwhip Effect. Jurnal Teknik Industri, 3(3). https://doi.org/10.25105/jti.v3i3.1570

Prasetya, D. H. (2009). Manajemen Operasi (Cetakan Pertama). MedPress (Anggota IKAPI). https://www.google.co.id/books/edition/Manajemen_Operasi/KqMYYO0Vge4C?hl=en&gbpv=1&dq=manajemen+operasi&pg=PA150&printsec=frontcover

Pratomo, F. (2021). Streamlining Proses Bisnis Penyiapan Press Release Inflasi. Infotek : Jurnal Informatika Dan Teknologi, 4(2), 125–130. https://doi.org/10.29408/jit.v4i2.3370

Prof. Dr. Sugiyono. (2013). Metode Penelitian Kuantitatif Dan Kualitatif Serta R&D. In C. Alfabet (Ed.), Alfabeta, CV (Cetakan pertama). Alfabeta, CV.

Saragi, V. S. (2020). Modul Manajemen Operasional. 2020, 99.

Sumanto, D. (2002). Metodologi Penelitian (Grasindo (ed.)). Grasindo. https://www.google.co.id/books/edition/Metodologi_Penelitian/lFJfR5jf-osC?hl=en&gbpv=1

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

Wijaya, J. K. (2021). Apa yang dimaksud dengan analisis proses dan aktivitas atau process and activity analysis? Dictio.https://www.dictio.id/t/apa-yang-dimaksud-dengan-analisis-proses-dan-aktivitas-atau-process-and-activity-analysis/14557